Common Stormwater Management Structures

Stormwater management is a process through which wet weather runoff is managed by constructing and maintaining facilities to infiltrate, filter, detain or retain the stormwater to remove pollutants, protect stream banks and prevent flooding. Managing stormwater through various techniques and practices is important to stop the damage which uncontrolled stormwater can do to streams.

Stormwater management structures have two basic functions: controlling the quantity of stormwater discharging, which helps to prevent flooding, stream bank erosion, and controlling the quality of stormwater discharging to our streams by removing pollutants in the water. Some structures provide both controls, while site constraints or other design considerations may require only one control.

Some of the most common stormwater structures installed in residential settings used to manage stormwater include infiltration trenches, sand filters, dry ponds, wet ponds, and oil/grit separators.

Infiltration Trenches

In Montgomery County, infiltration trenches are primarily used to filter pollutants and do not usually detain large quantities of stormwater. Some infiltration trenches are comprised of gravel filled trench, with a sand-filled bottom and a top layer of filter fabric. The top layer of fabric usually becomes clogged and will require replacement. Infiltration trenches allow stormwater to move slowly back into the ground removing pollutants as the water moves through gravel, sand, and finally the surrounding soil.

Infiltration trenches are not usually installed where large amounts of oil, grease, or other toxics may runoff with the stormwater and eventually contaminate the groundwater. Infiltration trenches installed at a time before adequate soil testing regulations existed may not function properly due to the poor absorptive abilities of the surrounding soil or because shallow groundwater saturates the soil beneath the trench, prohibiting the infiltration of stormwater. Monitoring wells are usually installed in the trenches to determine how well stormwater moves through the structure.

The gravel and sand in the trench can eventually become clogged and require replacement. Other maintenance items for infiltration trenches include removing vegetation that has encroached on the surface of the trench, and maintaining the cap on the observation well.

Sand Filters

Sand filters are stormwater facilities that use sand to filter and remove pollutants. Sand is used to provide a higher degree of filtering and pollutant removal as compared to infiltration trenches. Sand filters are generally classified as either: surface or underground.

Surface sand filters can range in size from 200 square feet to over 3/4 of an acre, have a sand depth of 18" comprising a bed or basin configuration and can vary depending on the drainage area they control. Surface sand filters have a tendency to clog if not maintained on a routine basis. The surface of the filter should be raked four times a year to break up any surface crust. Algal build up can significantly contribute to the premature failure of the structure. Algal growth is usually attributable to excessive application of lawn fertilizer during the wrong time of the year. Total replacement of the sand will be required and replacement time will vary depending on

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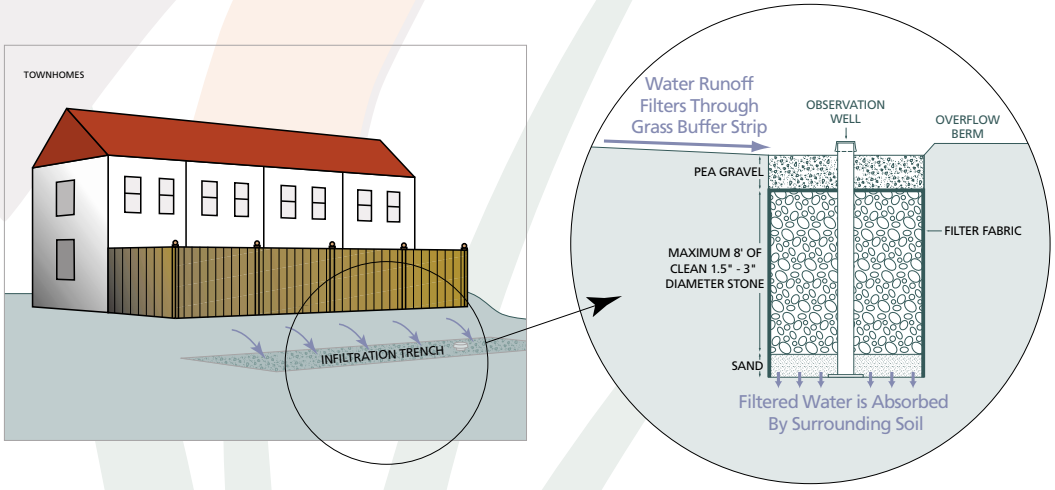
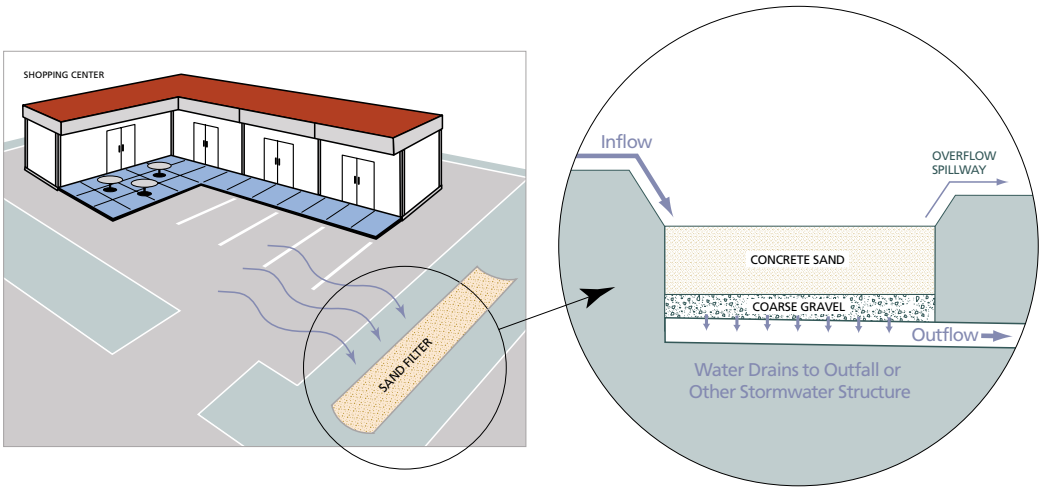


Typical Infiltration Trench

maintenance and pollutant input. Some surface sand filters have an underdrain that discharges stormwater when the filter becomes clogged, usually when the entire sand needs to be replaced. They are usually installed in conjunction with other stormwater management facilities in order to provide advance pollutant removal.

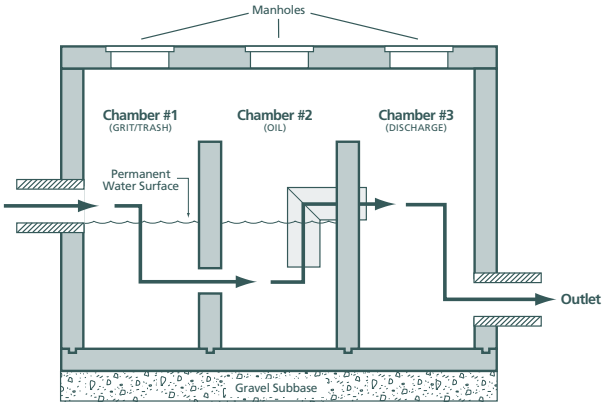
Underground sand filters are usually installed in commercial settings such a gasolene station where space is limited and enhanced pollutant removal is necessary. They are located under the parking lot or pavement and are installed with an oil/grit separator for advanced pollutant removal. They are smaller than surface sand filters, have about 18" of sand, and have varying design features. Because of the commercial activity onsite, clogging due to automotive fluids and other pollutants may necessitate the frequent replacement of the sand.



Typical Sand Filter

Oil/Grit Separators

Oil/Grit Separators are underground concrete storage structures that are designed to remove oils and other automotive fluids and sediment from stormwater. The structure is composed of a sediment-trapping chamber, an oil separation chamber and a third chamber that discharges the water. These structures require annual pumping and cleaning. Studies have found that these "older" designed structures are not very efficient at retaining and separating pollutants.



Oil/Grit Separator

What You Can Do

Infiltration trenches, sand filters, and oil/grit separators are just a few of the common structures designed to help clean stormwater. To keep these structures functioning properly, it is important to perform simple maintenance tasks.

These may include preventing grass from growing on the trenches and above ground filters, and keeping debris from clogging the inlets to oil/grit separators. Prevent contamination by properly storing pesticides, used oil, pool chemicals, or other potential pollutants at a suitable distance away from infiltration trenches other stormwater structures.

In considering additions to parking lots, buildings or other amenities, such as tennis courts or a storage shed, be certain not to place these facilities over the stormwater structures or in the actual drainage path. Poorly located sheds or otherwise altering the drainage flows can cause stormwater to run off and cause erosion at other locations on the property.

For assistance and more information such as proper storage techniques and information about stormwater facility maintenance visit the DEP website: **stormwater.askdep.com**

For more information:

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askDEP.com
We've got answers!